Other Aspects of B-Cell development:

“Original Antigenic Sin” –

Regulation of B-cells.

i) B-cells also have $F_c$ receptors.

ii) Binding of antibody to $F_c$ receptors attenuates ability of B-cell to become active due to dephosphorylation of activated BCR-antigen complex.

iii) Mechanism is in place to turn off B-cell activation when pathogen is cleared by the acquired system.

iv) “Sin” because it prevents an active immune response to related pathogens with similar epitopes if some of the original antibody is still present. This antibody will bind to the related antigen and prevent a B-cell response.

Secondary B-cell Response:

i) B & T<sub>H</sub>-memory cells can live for decades

ii) Clonal expansion during activation of B-cells produces large number of memory cells.

iii) Formation of antigen-B-cell/T-cell complex in 2<sup>nd</sup> organs enhanced by larger number of cells.

iv) Activation process faster.

v) Heavy chain type (isotype) and high affinity are preserved on memory B-cells.

T-cell Independent Antigens:

i) Repeating epitopes on pathogen can activate B-cells to differentiate into plasma cells. Clustering of BCR can provide a sufficiently strong signal for the cell to differentiate into IgM secreting plasma cells.

ii) No direct contact with T<sub>H</sub> cells, (response can be aided by proliferation cytokines from T<sub>H</sub> cells.)

iii) No class switching

iv) No memory cells.